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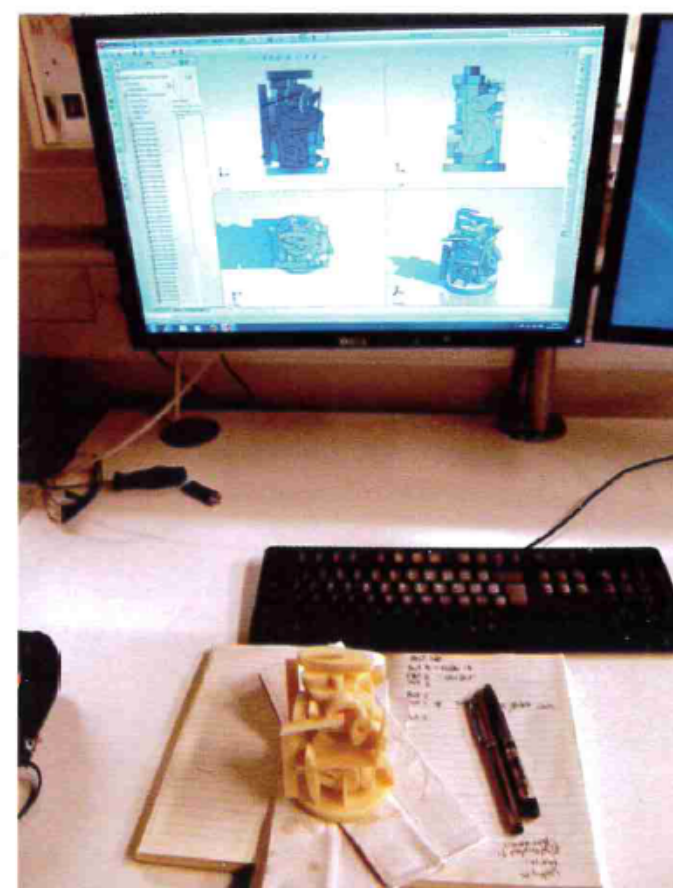
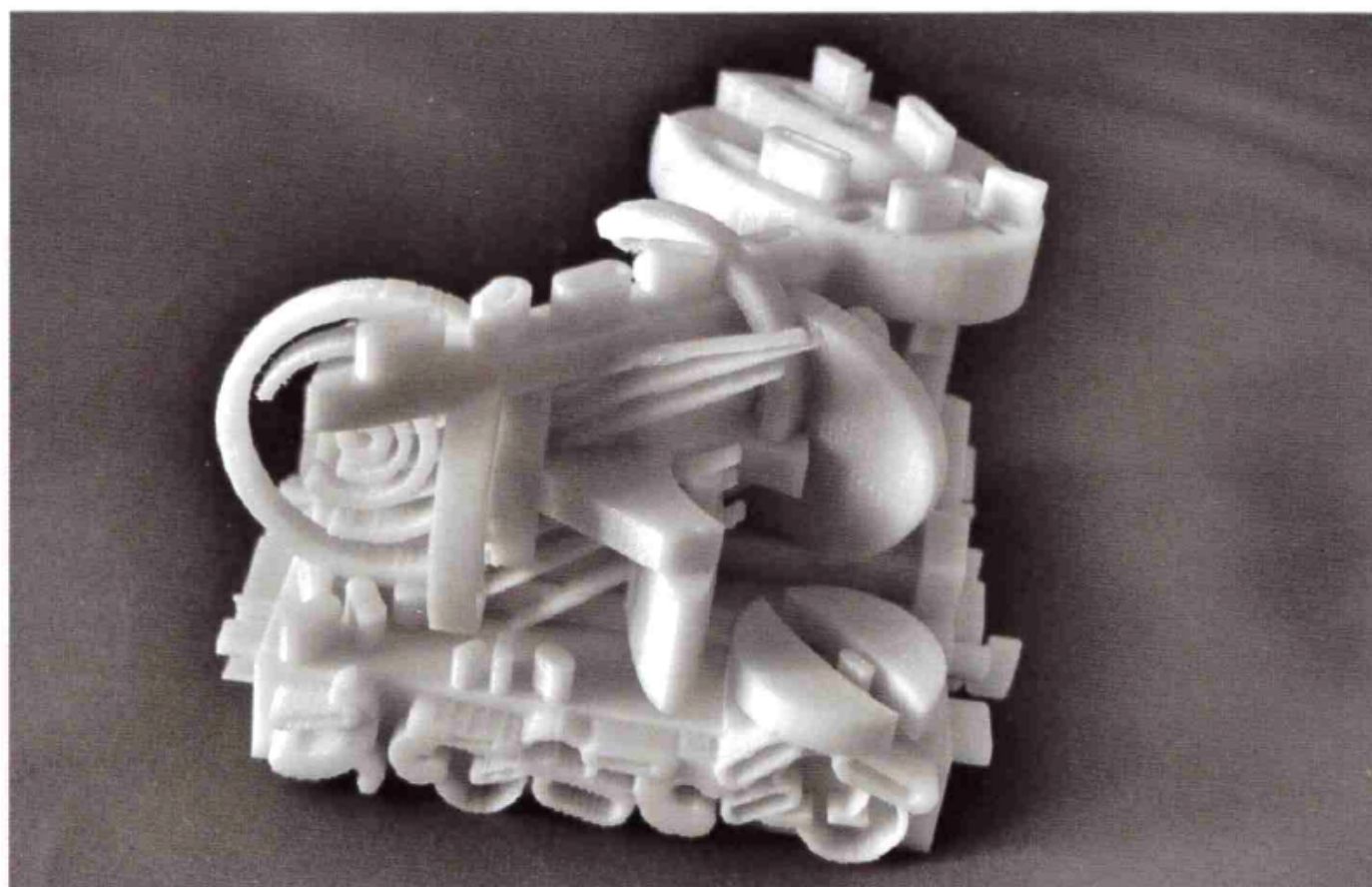
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Printed Forms

TECHNICAL 3D printing opens up a huge field of opportunities to the printmaker. **Stephen Mumberson RE** documents his experiments in 3D printing and the exponentially expanding possibilities for a contemporary printmaking practice

*'Out of this stony rubbish? Son of man,
You cannot say, or guess, for you know only
A heap of broken images, where the sun beats'*
'The Burial of the Dead' from
'The Waste Land' by T.S. Eliot (1922)

What is printmaking? Is it merely a reprographic function, a process of propagating skilled multiples, an impress, offset or stenciled form on to paper or a flat surface? A crafted autographic process or a very particular conversation in the visual arts where processes of contemporary practice meet the world of possible, the world of 'What if?' The world of action leads construction, chance, reaction and application. A freeform act of composition without a predictable end.

Printmaking has sat secure in its certainties, rules and conventions. A reasoned position serving a public perception crafted production of conventional subjects 'nicely' rendered. Yet printmaking historically has been associated with the radical, the inventive, the application of new technologies and processes.

My first desire over many years was to wrap images around a printed form and, if possible, mould that form at the same time. Over the years I experimented with many approaches. Printed work was sourced from interests in Primitive European Art, particularly from North African art, collages (and montage), overworked photographs, fertility symbols, outsider art, memories of past heavy industry machinery, engineering constructions and biological forms. All have fused together in the new work: in the production of three dimensional prints.

My approach to the drawings that would translate to the 3D printed form was like a freeform

musical script, drawn within the limits of an engineering CAD package but pushing and breaking the internal rules and intention of the software. This improvisation within the original drawings is a strange procedure to someone used to the predictable ends and work that followed a pattern of production. I went through a process that produced a print by a series of restricted limits open to an unpredictable course.

Many problems arose through trying to understand the 3D form in virtual imagery because it does not fully encompass the total form. It is easy to believe that a fully connected form has been constructed but without careful review it is easy to make constructional mistakes of just a couple of pixels that end in a disjointed object once sent to the printer. Once the printed form is detached from the support material (sprue), one can find a pile of disconnected pieces.

The printing is achieved by the production of a final drawing in a CAD software programme which is reprocessed by the printer software to the correct orientation and position. The object is built (printed) in thin layers in a cross pattern which gives a grained directional pattern to the surface of the printed object. This is a process that takes hours and may even take a day or so to print depending on its complexity. The simpler or smaller the object, the faster the printing. You can also vary the density and proportional size. Objects can easily distort or break under the weight of different aspects of the printed object once the support material is removed. Until the last minute it is impossible to be sure of the results.

After years of working with extended conventional means I feel as though I am back at a starting point where the magic of producing a print

has returned. The computer, like photography before it, has radically changed the nature of printmaking. The 3D print is a means of wrestling a printed object from a virtual geometry of the mind's eye and memories.

Since I started working with 3D prints, the technology involved has rapidly progressed, such that it is difficult to find a catch-all name for the differing possibilities. Metal can now be printed in substantial sizes and forms, which means engine parts can be replaced by the side of the race track and replacement body parts can be printed using body-compatible alloys. The range of materials printed has greatly expanded to include recycled plastic bottles, wood pulps combined with a glue binder and polymers fused via laser into thin skin-like structures that can be easily formed into a mould for delicate ceramic or metal pieces. Even the tissues and cells of our bodies are being experimented with through different printers in the hope of building replacement organs. But it is the potential for the visual arts that seems to hold a great promise. The printer's love of surface has led to artists producing 3D printed plates which either hold a photographic image or reproduction of a drawn image to produce conventional intaglio prints.

Today it is interchange between the new and old technologies, which is the work place of any contemporary printmaker. The great potential of the extended digital technologies may not yet let artists achieve work at the scale of a printed house (the cost of materials sadly still limits most artists), but the potential to most workshops and studios is already here. The limits are that of the imagination and the individual artist's ambition.

Jazz 3 will be shown at the National Original Print Exhibition at Bankside Gallery, 48 Hopton Street, London. 19 – 30 Sept 2018

Images

Jazz 3 (2018) by Stephen Mumberson. 3D print, 90 x 100 x 70 mm

Work station, photograph by Stephen Mumberson